




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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/757,314	01/14/2004	Mohammed Mahbubur Rahman	WJT08-0053 (JSF001-0002)	3500
7590	10/18/2005		EXAMINER HAM, SEUNGSOOK	
William J Tucker 14431 Goliad Drive Box #8 Malakoff, TX 75148			ART UNIT 2817	

DATE MAILED: 10/18/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/757,314	Applicant(s) RAHMAN ET AL.	
	Examiner Seungsook Ham	Art Unit 2817	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 October 2005.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-7,9-19 and 21-27 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-7,9-19 and 21-27 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>10/03/05</u> | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Specification

The disclosure is objected to because of the following informalities: The phrase, "a third resonator located on a third layer of dielectric material" should be deleted throughout the specification (including abstract).

Appropriate correction is required.

Claim Objections

Claims 4, 5, 9 and 16 are objected to because of the following informalities: ***

In claims 4, 9 and 16, "resister" should be corrected to --resistor--; and

In claim 5, "or dielectric material" should be deleted.

Appropriate correction is required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-7, 9-19 and 21-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Peters (US '259) in view of Liang et al. (US 6,492,883) and Ammar et al. (US '404).

Peters (figs. 4A-4C) discloses a multilayer filter comprising: a first resonator 208a on a first dielectric layer 202c; a second resonator 206 coupled to the first resonator on a second dielectric layer 202b; and a third resonator 208b coupled to the second

connected to the first resonator; and an output transmission line 207b connected to the third resonator; and two ground planes 200, 203 are provided on upper and bottom planes.

Peters does not show a voltage variable capacitor is coupled to at least one of the resonators and the first and second resonators are disposed on a LTCC (low-temperature co-fired ceramic).

Liang et al. (figs. 6-9) discloses a similar combline filter having voltage variable capacitors coupled to resonators to tune each resonant frequency or the center frequency of the filter and also teaches using tunable capacitors in a filter to tune the resonant frequency (col. 5, lines 14-25). Moreover, Liang et al. suggests using MEMS varactor as a variable capacitor (col. 10, lines 20-48). Furthermore, Liang et al. teaches that tunable duplexers (e.g., filters) can cover larger frequency band than fixed duplexers (col. 9, line 63 – col. 10, line 6).

Ammar et al. (figs. 7-9) discloses a multilayer filter having a plurality of resonators 54 formed on LTCC layers.

It would have been obvious to one of ordinary skill in the art to provide a voltage tunable variable capacitors or MEMS varactors of Liang et al. in the device of Peters to tune in different frequencies (including the center frequency) for fast tuning capability, small size as well as improve the insertion loss as shown by Liang et al. (col. 5, lines 11-26, col. 6, lines 45-67, for MEM varactors, col. 10, lines 20-48), and also forming the first and second resonators on a LTCC in the modified device of Peters to obtain a high

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"Q" filters in a small spaces and lower manufacturing tolerances as taught by Ammar et al. (col. 1, line 31 – col. 2, lines 13).

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Pond et al. (US '364) discloses a stripline filter disposed on a LTCC substrate.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Seungsook Ham whose telephone number is (571) 272-2405. The examiner can normally be reached on Monday-Thursday, 8:00AM-5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Pascal can be reached on (571)-272-1769. The fax phone number for the organization where this application or proceeding is assigned is **571-273-8300**.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Seungsook Ham
Primary Examiner
Art Unit 2817

sh
October 12, 2005